# HFD23

# SUBMINIATURE SIGNAL RELAY

C **RU** US

File No.:E133481

CQC

File No.:CQC09002035070

## Features

● Max.2A switching capability
● High sensitive: 150mW
● 1 Form C configuration
● Plastic sealed type available
● Environmental friendly product (RoHS compliant)
● Outline Dimensions: (12.5 x 7.5 x 10.0) mm

## CONTACT DATA

| | |
|---|---|
| Contact arrangement | 1C |
| Contact resistance | 100mΩ max. (at 10mA 30mVDC) |
| Contact material | AgNi +Au plated |
| Contact rating (Res. load) | 0.5A 125VAC / 1A 30VDC |
| Max. switching voltage | 125VAC / 60VDC |
| Max. switching current | 2A |
| Max. switching power | 62.5VA / 30W |
| Min. applicable load [1] | 1mA 5V |
| Mechanical endurance | 1 x $10^7$OPS |
| Electrical endurance [2] | 9 x $10^4$OPS, 0.5A 125VAC, Resistive load., Room temp., 1s on 9s off |

**Notes:** 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.
2) Electric endurance data are collected in the NO or NC contact test.

## CHARACTERISTICS

| | | |
|---|---|---|
| Insulation resistance | | 1000MΩ (at 500VDC) |
| Dielectric strength | Between coil & contacts | 1000VAC 1min |
| | Between open contacts | 400VAC 1min |
| Operate time (at nomi. volt.) | | 5ms max. |
| Release time (at nomi. volt.) | | 5ms max. |
| Temperature rise (at nomi.volt.) | | 65K max. |
| Vibration resistance | | 10Hz to 55Hz 3.3mm DA |
| Shock resistance | Functional | 98m/s$^2$ |
| | Destructive | 980m/s$^2$ |
| Humidity | | 5% to 85% RH |
| Ambient temperature | | -30˚C to 70˚C |
| Unit weight | | Approx. 2.2g |
| Termination | | PCB (DIP) |
| Construction | | Plastic sealed |

**Notes:** 1) The data shown above are initial values.
2) UL insulation system: Class A

## COIL

| | |
|---|---|
| Coil power | Sensitive: Approx. 150mW; Standard: Approx. 200mW |

## COIL DATA

at 23˚C

### Standard type

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Max. Voltage VDC | Coil Resistance Ω |
|---|---|---|---|---|
| 1.5 | 1.20 | 0.15 | 2.25 | 11.3 x (1±10%) |
| 3 | 2.40 | 0.30 | 4.5 | 45 x (1±10%) |
| 5 | 4.00 | 0.50 | 7.5 | 125 x (1±10%) |
| 6 | 4.80 | 0.60 | 9.0 | 180 x (1±10%) |
| 9 | 7.20 | 0.90 | 13.5 | 405 x (1±10%) |
| 12 | 9.60 | 1.20 | 18.0 | 720 x (1±10%) |
| 24 | 19.20 | 2.40 | 36.0 | 2880 x (1±15%) |

### Sensitive type

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Max. Voltage VDC | Coil Resistance Ω |
|---|---|---|---|---|
| 1.5 | 1.20 | 0.15 | 2.25 | 15 x (1±10%) |
| 3 | 2.40 | 0.30 | 4.5 | 60 x (1±10%) |
| 5 | 4.00 | 0.50 | 7.5 | 167 x (1±10%) |
| 6 | 4.80 | 0.60 | 9.0 | 240 x (1±10%) |
| 9 | 7.20 | 0.90 | 13.5 | 540 x (1±10%) |
| 12 | 9.60 | 1.20 | 18.0 | 960 x (1±10%) |
| 24 | 19.20 | 2.40 | 36.0 | 3840 x (1±15%) |

**Notes:** 1) When user's requirements can't be found in the above table, special order allowed.
2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

## SAFETY APPROVAL RATINGS

| | |
|---|---|
| **UL/CUL** | 1.0A 30VDC |
| | 0.3A 60VDC |
| | 0.5A 125VAC |

**Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.

HF HONGFA RELAY

2014 Rev. 1.01

## ORDERING INFORMATION

| | HFD23 | / | 012 | -1Z | S | (XXX) |
|---|---|---|---|---|---|---|

**Type**

**Coil voltage**  1.5, 3, 5, 6, 9, 12, 24VDC

**Contact arrangement**  **1Z:** 1 Form C

**Coil power**  **S:** Sensitive type  **P:** Standard type

**Customer special code**

**Notes:** Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
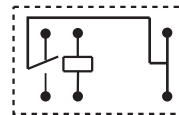
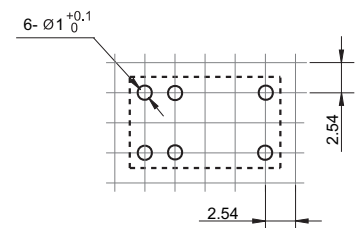## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT   Unit: mm

### Outline Dimensions
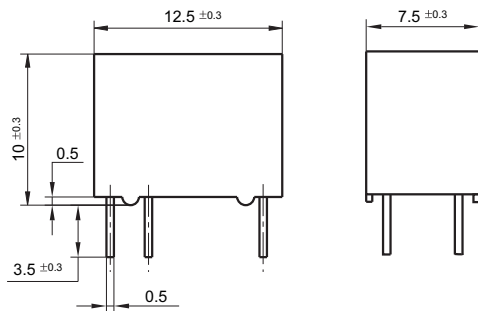
### Wiring Diagram
(Bottom view)

### PCB Layout
(Bottom view)



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.
3) The width of the gridding is 2.54mm.

# CHARACTERISTIC CURVES

### MAXIMUM SWITCHING POWER
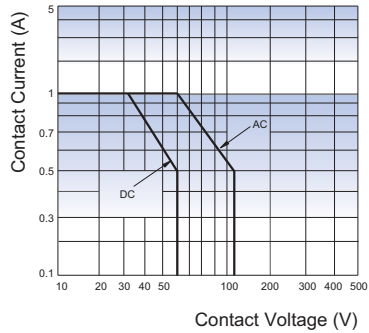


### ENDURANCE CURVE
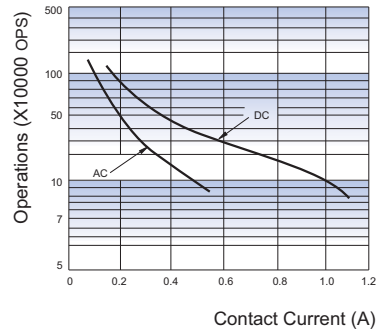


**Test conditions:**
Resistive load, Room temp., 1s on 9s off.

**Notice**

1) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.

2) The relay may be damaged because of falling or when shocking conditions exceed the requirement.

3) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

4) Regarding the plastic sealed relay, we should leave it cooling naturally untill below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C.Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.

5) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.

6) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidetines of relay".

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.